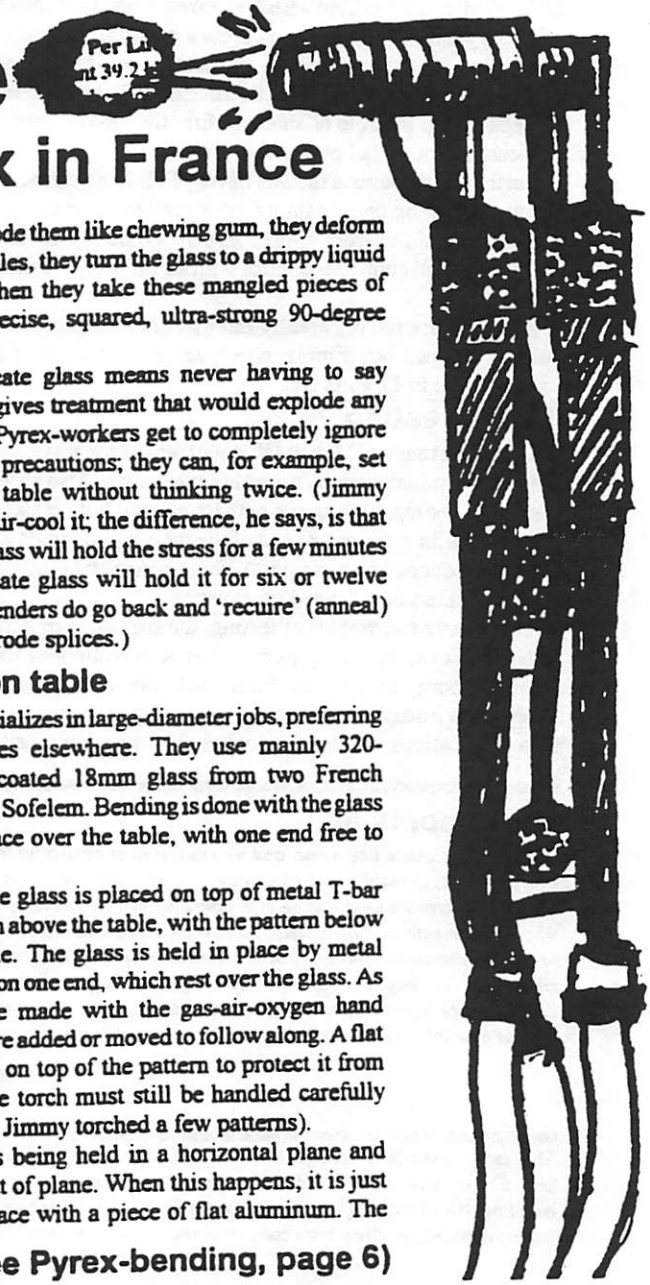
THE NEON NEWS

ALL'S WELL THAT BENDS WELL

NUMBER 12 WINTER 1993

Too hot to handle

A Yank learns to bend pyrex in France



By Ted Pirsig

As someone who has pursued a neon odyssey of sorts, I was curious to meet Jimmy Brown.

He is 35 and from Minneapolis, and went to Masonlite's neon school in 1988, where he learned British-style techniques with lead glass (they don't use crossfires). There he met a visiting Dutch sign shop owner who asked him to come to Holland to do uncoated 18-20mm soda glass torchwork, which is completely different. He spent his last few weeks at Masonlite concentrating on soda glass techniques.

After nine months in Holland, struggling with the glass and the language, immigration laws forced Jimmy to leave, so he joined his sister in Dublin and worked in a glass shop there. They use 10-15mm precoated soda glass: time to learn new techniques again.

After being in Dublin a year, he met a vacationing Frenchwoman, and he moved to France and married her. However, he couldn't find work in the local sign shops, and had to commute several hours each way from their home near Nantes to Paris each week. Once again the torchwork was different, this time using ten-foot-long tubes of 15-20mm precoated pyrex glass.

Finally he landed a job at a sign company near home, telling them, "Look, it's ridiculous to test me with torches I'm unfamiliar with. Tell you what: let me work for a week, and if on Friday you want to keep me, you pay me for that week. If you don't want me – fine, you owe me nothing." (A good strategy; wish I'd thought of it years ago.) He got the job.

Never say sorry

Last August, mutual friend Alan Geoffrey drove us to Jimmy's home in France, where we spent a summer weekend talking and hiking and visiting his shop. Here's some of what I learned:

Pyrex techniques for neon look comical, even just plain WRONG, from a lead-glass perspective. Using mostly a single-point ultra-hot hand torch, French benders blow bubbles in the glass and explode them like chewing gum, they deform the glass into bad angles, they turn the glass to a drippy liquid at the bends – but then they take these mangled pieces of tubing and make precise, squared, ultra-strong 90-degree returns from them.

In short, borosilicate glass means never having to say you're sorry – it forgives treatment that would explode any other worked glass. Pyrex-workers get to completely ignore all our typical stress precautions; they can, for example, set hot glass on a cold table without thinking twice. (Jimmy admits it's better to air-cool it; the difference, he says, is that while soda or lead glass will hold the stress for a few minutes or an hour, borosilicate glass will hold it for six or twelve months; so French benders do go back and 'recuire' (anneal) backbends and electrode splices.)

Tubes bent on table

Jimmy's shop specializes in large-diameter jobs, preferring to send smaller ones elsewhere. They use mainly 320-centimeter-long precoated 18mm glass from two French companies, Sefli and Sofelem. Bending is done with the glass pinned rigidly in place over the table, with one end free to bend.

In other words, the glass is placed on top of metal T-bar spacers about an inch above the table, with the pattern below it pinned to the table. The glass is held in place by metal weights with a hook on one end, which rest over the glass. As suceeding bends are made with the gas-air-oxygen hand torch, more T-bars are added or moved to follow along. A flat piece of steel is laid on top of the pattern to protect it from flames, however, the torch must still be handled carefully (when first learning Jimmy torched a few patterns).

Since the glass is being held in a horizontal plane and heated it will sag out of plane. When this happens, it is just pushed back into place with a piece of flat aluminum. The

(see Pyrex-bending, page 6)

12-volt transformers tested, compared

<Editors' note: This is a reprint of an article that appeared in European Sign magazine (yes, we did it for the money). In the time since it was written (June '92) new models have appeared on the market, but we're unable to update the article as we no longer have access to the same test equipment.>

By Ted Pirsig

With all the different 12-volt transformer models available, there is surprisingly little overlap between them – this one is smallest, that one is cheapest, another has the highest secondary voltage, and yet another has the highest secondary milliamperage.

Some basic things:

The most obvious use for these smaller transformers is to illuminate neon on trucks and cars (since automotive electric systems also run on 12 volts), but they also can be used in other places where neon cannot easily be connected to conventional electric power. These new transformers make it possible to use neon virtually anywhere: on kites, scuba dives, and I lit up a road-ready bicycle for this story, with the neon, transformer and battery all housed inside the front wheel's spokes, so the four colors rotated with the wheel – an effect that drew a crowd in Amsterdam.

Another advantage these 12-volt units have is that they can be much safer than conventional transformers. While the secondary voltage is still capable of shock or fire, the 12-volt input voltage ensures that no lethal power is present.

Furthermore, several models have "TTL logic control," which allows switching and dimming via a remote source. This source could be anything from simple circuitry built by an electronics hobbyist to full computer control with an infinitely variable range of animation.

And they are the only really international transformers: In any country one can buy simple, cheap adapters to convert from the local voltage to 12 volts DC.

Tough testing

Given the range of 12-volt DC neon transformers available now, the tests I conducted are by no means exhaustive. Also absent is any long-term testing, with an eye both for general failure and mercury migration (dimming at one end of the tube, a phenomenon unique to high-frequency transformers). Time constraints simply didn't allow this kind of extended observation.

There were two rounds of testing, the first done in Amsterdam at Neon Weka, with help from owner Rob Nolte and technician Joop Limburg, as well as from Dick Boonstra, owner of De Blaecker in Rotterdam. As their primary concern is for commercial sign applications, the testing took a slant that way, using large-diameter, long tubes. As many of the 12-volt transformers are intended for use on small neon tubes I conducted a second, separate test to see how they worked under these loads.

At Neon Weka the test equipment consisted of: a 30-amp regulated power source (hefty enough to be sure of consistent 12-volt output); a primary amperage meter; a secondary mA meter (one compatible with high-frequency transformers); a kilohertz meter; a light meter; and five three-foot-long 15mm argon/mercury tubes, filled to normal gas pressure. The sequence of testing was to light one tube, then two, then three, and so forth, and observe the results. (The "lux" readings from the light meter should be taken as relative only to other transformers in this first test.)

Clear winners for maximum footage and brightness were the Tech 2000 5,000-volt model, and the Elettrotecnica Per Luce 3,000-volt constant-current model. These two easily surpassed all others for brightness and consistent performance.

With the **Elettrotecnica Per Luce**, kilohertz was listed at 28.5 but our meter showed a constant 39.2 khz. It has a short-circuit mA of 20, and the following results when loaded:

1 tube: 1.4 amp primary; 19 mA secondary; 1500 lux.
2 tubes: 2 amp primary; 18 mA secondary; 1500 lux.
3 tubes: 2.2 amp primary; 13 mA secondary; 1400 lux.
4 tubes: 2.7 amp primary; 12 mA secondary; 1300 lux.
5 tubes: 2.9 amp primary; 10 mA secondary; 1300 lux.

Only with an additional tube did the middle tube of the series begin to dim.

This transformer is on the large end of those we tested (6.5 x 2 x 1.5 inches); it is rectangular with holes drilled for easy mounting, and European-style screw-down insulated connectors for all wiring.

The Tech 2000 "Midget" (5,000-volt) model operated between 25 and 26 kilohertz, with the following:

1 tube: .5 amp primary; 8 mA secondary; 800 lux.
2 tubes: .8 amp primary; 7 mA secondary; 1000 lux.
3 tubes: 1.0 amp primary; 8 mA secondary; 1000 lux.
4 tubes: 1.3 amp primary; 8 mA secondary; 950 lux.
5 tubes: 1.4 amp primary; 10 mA secondary; 1000 lux.

This model is available with either an adjustable dimming screw or an extra wire for TTL-type external control.

The Tech 2000 "Wee-1" (2,000-volt) model ran at 35 kilohertz, with the following:

1 tube: .4 amp primary; 4 mA secondary; 750 lux.
2 tubes: .5 amp primary; 4.5 mA secondary; 600 lux.
3 tubes: No light in middle tube.

(see 12-volt, page 4)

Dear neonistas,

There's no place like home, and we know it after returning the long way from Amsterdam. Six weeks of toddler-toting from Egypt across Asia made even overpriced McDonald's look like a haven in heartless lands (after all, Lionel would always eat fries, and coffee didn't cost $4 a cup there).

But we learned a lot about neon in both low-tech and modern factory plants, and we think we've seen neon's future in the latter. Not that we like it much, but who can compete with the license-plate neon we saw selling for $15 wholesale? Yesterday, beer signs; today, car neon and telephones; and tomorrow, Asian bending factories will certainly be putting out more neon than today. So just as we helped cheaper American-style neon put a scare into old-fashioned European sign shops, we shuddered to see some awesomely fast benders earning $10 a day. (The illustrations on every page are from our Hong Kong neon photos.)

Now we're home and pumping again, and will be until we take off for NESA in April: we look forward to meeting some of you there.

This newsletter is coming out late because we had thin pickings to fill it with, until we got on the phone and rustled up some stories. Which is to say, send articles!

Aloha again. Ted + Val

The Neon News is published quarterly by Val Crawford and Ted Pirsig, P.O. Box 668, Volcano, Hawaii, 96785 USA; (808) 967-7648. Subscriptions are $16 per year U.S., $18 per year Canada, and $20 per year foreign subscribers, payable in U.S. currency only. Single and back issues are $4 each plus $2 per order for postage and handling. No advertising is accepted, except for classifieds, available to subscribers only at $.50 per word. The Neon News welcomes stories, artwork, photographs, letters, ideas, suggestions, irate comments and praise. The newsletter is intended to be a forum where neon folks can exchange ideas and information.

A woman's woes in the neon workplace

By Anonymous

I've been a glass blower for 16 years. Most of that time I've been the only woman on the job. At the editors' request, I'd like to share some of my experiences, how I've handled tough situations, and the price I've paid for it. My hope in writing this article is to help other women coming into the field, and to help guys understand that a woman in the glass shop is not a threat.

First let me say I am not a militant feminist; I didn't even vote for the Equal Rights Amendment. I'm not out to get men. All I've ever asked is a chance to prove my skill, to be paid equally, and to be treated like one of the gang.

Unfortunately, this has not always been the case. Let's face it: the sign shop is one of the last strongholds of men-only workplaces. So getting your foot in the door can be rough for women. When a shop foreman or owner has been concerned about me working in his shop, it rarely has anything to do with qualifications. It's usually about how the male crew will react, and how I'll handle this. He doesn't want his crew "distracted," and fear of a sexual harassment or discrimination suit seems to be a concern also. Now that I am married and older it's less of a problem, whether that's fair or not.

I got so tired of not being listened to. One time I asked my foreman, "If I stuff a sock in my pants, will you listen to me then?"

Let me stress that most shops and most men are great to work with, once they get used to you being around. But try as you may, there is the occasional neanderthal who makes life miserable. I was born, raised and lived most of my life in the South, so I may have been exposed to more cavemen than most, although it has gotten a LOT better over the last 16 years. Here are some examples of harassment and discrimination I've come across and what I did about them.

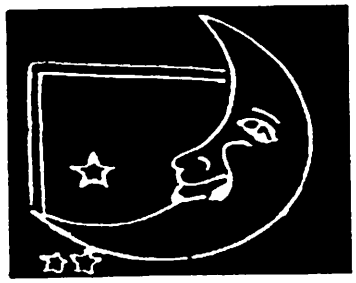
Hot Pants and Sleaze Bag

The worst offense I encountered was in a small sign company that recruited me from another state to be their second tube bender. I had a contract for a year, which included a clause about moving expenses. If I left before a year without just cause, I had to repay the $2000 in moving costs. But if I left because of the company's fault, they had to pay to move me home again. This was to protect me if the company folded, and them if I walked out after a few months. Fair enough.

Unfortunately, after a few months, the first bender (who I'll call Hot Pants) took a fancy to me. He had a strange way of showing it, though; he started leaving graphic hard-core pornography on my workbench, always open to some page he thought was appropriate. Now the owner (who I'll call Sleaze Bag) thought he was a playboy; he and Hot Pants were drinking buddies too.

So when I went to Sleaze Bag and said I couldn't work with Hot Pants, I was fired. Not only that, but they kept my last three weeks' wages to repay my moving expenses. When reason would not prevail, I went to the Equal Employment Opportunities Commission. Hot Pants admitted to the investigator that he had done the deeds, and Sleaze Bag didn't realize he was responsible for his employee's actions. I won the suit and got my money back, plus wages for the time it had taken to find another job.

Justice served. But it came back to haunt me: while applying for a job in the same city several years later, I was turned down because I had filed a suit and was a "troublemaker." Not fair.



Usually I can handle situations by myself. Only as a last resort do I go to management with a complaint. Nobody likes a snitch, and if you complain to the boss at every turn, you don't get much sympathy. But if you are being harassed or discriminated against, do something. Try to resolve it within the company before you file suit with the EEOC. If it's serious, keep notes on the ugly incidents: dates, times, persons present, places, etc. This can weigh heavily in your favor.

Lower pay, lonely lunches

I haven't experienced much direct sexual harassment, other than the occasional remark or request for a date, which I don't see as harassment unless it's a continuing unwanted situation. What I've experienced most often – and it's subtle at times – is discrimination.

I had an instance where I found out I was paid $2 an hour less than a man hired at the same time I was. I did better work and was faster. I asked about a raise and was told he had a family to support and so he needed more money. I pointed out that they should pay by merit, not marital status, and I deserved the same pay. I got the raise, and it turned out to be one of the best jobs I ever had.

Once I hired on to a large sign shop, replacing an employee who was reportedly unreliable. The owner hired me without asking the foreman, who was not pleased I was there. And one of the old-timers who was set in his ways said "You just don't belong here – what would our wives think about a woman in the shop? The crew will never get any work done." I was strangely warned to keep to myself and not distract the men while they were working.

I'm not sure what this guy thought I was going to do. It's not like I have some mystical power to enslave men's minds. I was offended, but I really needed the work. I decided to win them over with excellence. You can't deny good work.

I spent the first six months eating my lunch in silence. But after a while of working my butt off and never whining or asking for help, I gained the respect of the crew. The foreman never did give in, and started sending me home if there wasn't enough glass work; before that I usually had done plastic or paint work when glass was slow. I needed full weeks in order to make ends meet, so I gave my notice.

The foreman told the owner I had walked out on him. But when the old-timer found out, he told the owner I had worked hard and was a good employee and I didn't walk out. They hired me back, and the foreman didn't last much longer.

(I never did get to go on the shop fishing trips though. Too bad, because I really like to fish. Do you think they were afraid I'd catch more, or that I'd find out the truth about fish tales?)

One of the most frustrating problems I've encountered is not being relied on for information. In one case, I and my apprentice had bent about 4,000 feet of neon for a huge nightclub exterior. Within a few weeks, tubes started pouring back into the shop. Of course management was concerned and asked me what I thought was wrong.

After looking at the tubes, I was sure they were arcing out: the electrodes were black and crystallized where they had arced out. They asked

(see Sex, page 8)

(12-volt, from page 2)

The most famous feature of the Tech 2000 models is their small size; how nice too that they perform so well!

The **Tunewell** models, both controlled and uncontrolled, ran between 30 and 36 kilohertz with the following:

1 tube: 1.3 amp primary; 15 mA secondary; 1250 lux.

2 tubes: 1.4 amp primary; 10 mA secondary; 1000 lux.

3 tubes (dimming some on end tube): 1.1 amp primary; 8 mA secondary; 950 lux.

Of the three **Bertonee** models only the #NPS-112-D3-5 would light one tube. This ran at 71 kilohertz, drawing .4 amp on the primary with a secondary of 4 mA, resulting in 600 lux.

The **Transfotec** unit, with listed specs of 6000 volts/30 mA (the largest of all models, both for voltage and mA) was a disappointment. Operating between 29.4 and 32.2 kilohertz it delivered a short-circuit mA of 21, and the following results when loaded:

1 tube: 1.1 amp primary; 19 mA secondary; 1500 lux.

2 tubes: 1.8 amp primary; 19 mA secondary; 1500 lux.

3 tubes: The output became unstable, with the primary varying between 2.1 and 2.5 amps; the secondary between 17 and 19 mA; the lux between 1400 and 1500.

4 tubes: Also unstable, averaging 2.2 amp primary, 16 mA secondary and 1250 lux.

5 tubes: Starting at 1.8 amp primary, 10 mA and 950 lux, the middle tubes were dark and soon the readings dropped off altogether to 3 mA and 600 lux. At this point we went back to three, then two, then one tube, and only with one tube would it resume normal operation.

The **Focus** transformer we tested was an older model (there is a new one out, but it was not available at the time of testing):

With 1 tube it ran at 32 kilohertz, drawing .9 amp primary and delivering 13 mA and 1400 lux.

With 2 tubes it dropped to 18 kilohertz, drawing 1.1 amp primary and delivering 4 mA and 800 lux.

The **"Fire Bug"** from Information Unlimited (also an outdated model, with a new one unavailable at the time of testing) would not light one tube from end to end.

Small-tube testing

For the second test I pumped some green 10mm tubes with pure argon plus mercury at normal gas pressure (13 torr). I made one 12-inch tube and three twenty-four-inch tubes, adding footage to the transformers in the sequence of one foot, two feet, three feet, etc. This testing was done without meters and gauges and spinning dials – just my two eyes and a lot of jumper wires.

Bertonee has three different 12-volt models, with alpha-numerical names like "NPS-112-D3-5" that I find confusing. Basically the "D2" is the smallest and simplest, with a 500-volt output. There is an "S" model with built-in scripting (which gives the effect of moving light), with the same peak output and about twice the bulk. Then there's the "D3" with a 900-volt output, slightly bigger than the D2.

The D2 ran one 24" tube just fine, mildly warm to the touch after four hours of running. When an additional 12" tube was placed on it it would light both, but with noticeable dimming in the middle.

The D3 in turn ran two of the 24" tubes just fine, dimming only with the addition of 12" more, and also was mildly warm after several hours of use.

The S model, being a somewhat fancier D2, has scripting and flashing functions, controlled with two "trim pots" (trimmable potentiometers, little disks with screwdriver slots in them). One trim pot varies the degree between scripting and flashing, and the other the "on" time. The maximum flashing speed is a good clip at 200 times per minute: the slowest on our test model was a full 14 seconds between momentary "off" flashes.

These units have the distinction of being both small and inexpensive – easily filling the "accent neon" niche.

Tunewell has two 12-volt models, both able to accept external 12-volt logic control, one model having built-in dimming and flashing controls. These models have the slick feature of operating on 12 volts DC, yet the positive and negative input leads can be reversed and they not only will suffer no damage, they'll run just fine with the wires reversed.

Both models easily ran three of the 24" tubes, with slight dimming only after the addition of another 12", a total of seven feet of glass and four pair of electrodes. When flashing, the "controlled" model was able to run additional glass as well.

The controlled model has three trim pots: one for dimming, one for flashing "on" time and one for flashing "off" time. The dimmer operated smoothly, with no "jelly beans" at any point and no jumps in brightness. The minimum speed for flashing varied some, depending on the dimmer setting: When barely lit it stayed on for three seconds; at full brightness this changed to half a second. The maximum flashing speed is a full-blown, hurts-your-eyes strobing effect.

The Tunewell models have built-in overload protection, and shut off if they run too hot. To test this I added four more feet of 10mm argon/mercury tubing, enough to make the whole load go dim (total: 10 feet of glass, five pairs of electrodes). It sat this way for fifteen hours but didn't get hot or shut off, with the tubes burning evenly dim the whole while – an impressive feat in itself. But if you should happen to touch the high-voltage "hot" lead you'll get a nasty jolt – about what you'd expect from a normal core-and-coil 2,000-volt transformer.

The obvious disadvantage of the Tunewell is its large physical size and cylindrical shape (similar to a car's ignition coil): it could be hard to make room for, and especially hard to mount without a special bracket. But it does come with a two-year guarantee, which is much longer than other models.

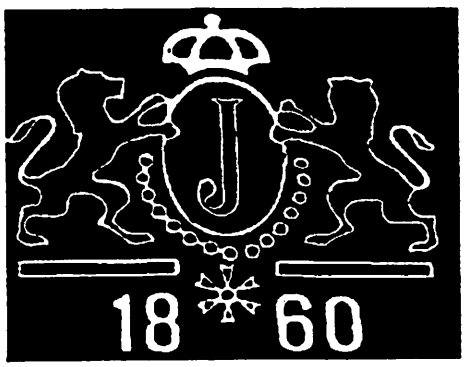
The **"Fire Bug"** model ran 24" of glass just fine, and with an additional 12" of glass got substantially dimmer (but evenly so). This unit is mounted on a piece of aluminum that becomes too hot to touch; one would need to incorporate some method of cooling into its mounting.

Manufacturers' data

Model: **Elettrotecnica Per Luce AC-HF 3000 25** (12v. DC)

Mfgr: Elettrotecnica Per Luce S.R.L., Via Caravaggio 26, 20033 Desio (Mi) ITALY. Telephone: 0362/630872

Warranty:	3 months
Size:	6.5x2x1.5 inches



Models: **Midget & Wee-1**

Mfgr: Tech 2000, 5631J Palmer Way, Carlsbad, CA 92008; phone:(619)431-7144; fax: (619) 431-5271

Warranty:	3 months
Distributor:	Direct
Price:	$45; $35
Midget size:	2 x 1.5 x 5/8 inches
Wee-1 size:	1.5 x 1 x .5 inches

Models: **NP02C01211** (uncontrolled)

(see More 12-volt, page 6)

Beer, pit bulls and other Paris Neon lessons

<Editors' note: We got a note from Robert Sellens, AKA Dr. Neon of Longley BC, who suggested that Edward write about his schooling at Paris Neon in Kansas City. We passed on the suggestion, and six hours later he faxed back this reply:>

By Edward DeZuzio

Haagen Daaz! It's like the song says... "Boy this is sure stirrin' up some ghosts for me."

And ghosts they are. Very translucent memories and ethereal recollections of the best time of my life.

I was eighteen or nineteen years old when I arrived at Paris Neon Inc. for the first time. Of course I need to let you know that my father was with me for that first visit. Upon my giving up college study of right-side academics, he wanted to see exactly where his financial aid was going. I don't think he was overjoyed with the whole kit and kaboodle.

I only think this because I was overcome by daydreams becoming reality and was greatly impressed with Paris Neon. My father and I always had opposing opinions on schooling subject matter. This was reinforced upon our entrance into Per's world-o-neon (Per Wallin was the head honcho).

Upon walking in, I couldn't help but notice the letters on the door. Most establishments post their hours and instructions for entering in vinyl on their front door, but this door had some missing letters. The result was "O HER DO" instead of, or in place of, "OTHER DOOR." Now that I'm a graduate, I lean toward the "in place of" theory.

Oh, I can almost taste the innocence of not being a tubebender, watching the craft as a "know-nothing," the feel of moistureless and passionate air, the smell of heated glass and burning paper. I had no idea what all that input would mean. I did know that Paris Neon was the school I would attend.

What made my mind up? I'll tell you, even if you don't want to know. It wasn't the teachers, the location, the assistance with job placement, or the bedrooms on the second floor. It was the four LOUD speakers singing out rock & roll tunes and the black ceiling and the full-size pool table and the gray walls splatter-painted with pink and turquoise and the pot of black coffee and the way everybody said NEW JOISEY. Yes. Yes. Yes.

Well, after convincing my dad that it wouldn't be a waste of time or money, and after reassuring my girlfriend that it wasn't forever, I attended a seven-week-long six-week course of luminous tube design and fabrication. The no-waste-of-time-or-money-thing held true but my "now married to another man (all my fault, damn it!) girlfriend" situation is as you've just read. Damn! Damn! Damn!

In the same class were Todd and Stan from Illinois and Jeff from Indiana. We all got along well (and why not – we were on the same side of the bench watching Per do splices and double-backs in his sleep).

The school days were loose; you could pretty much do what you pleased as long as at the end of the day you had five superb splices no more than one inch apart and five of whatever the bend du jour was. The loose atmosphere was great for learning, as there was enough stress in the glass I was bending.

The core of the curriculum was this:

1. Don't force the issue. Being too anxious to learn only makes it harder. I think this is true for any glass work.

2. After eight hours in the fires, shut down and have an ice-cold beer. The ice-cold beer wasn't a necessity, as water would do, but it was a great reward and I believe it really helped. (Yeah, right.)

3. Think about what you are going to make for your project. This was emphasized a lot. Per, Brian and Bob were the mentors of Paris Neon students, and it was important to them that the students felt good about what they could and couldn't do.

There was also a wonderful young woman who worked there who helped with patterns and ideas – I wish I could remember her name. I do however recall the names of her boyfriend (Steve) and her pit bull (Petey), both of whom I was happy to be on the good side of. I'll never drink out of another man's stein thanks to a painless lesson from Steve, and I'll always take my sneakers off when a pit bull wants to play with the laces. (And if I ever run across someone looking for their pit bull, I'll tell them to check the roof. Petey loved to be there, watching like a gargoyle for her mistress's return.)

We were better than the Blues Brothers. We were neon men out to conquer West Fifth Street in Kansas City, Mo.

Back to 3: All students had to leave a project behind, and the bends had to be clean. When it came to the individual bends an Andy Warhol attitude would not be tolerated. If it didn't come out clean the first time, do it again.

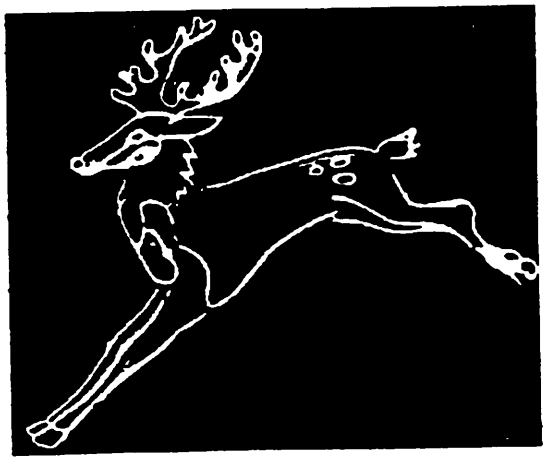
One week Joe Walsh was a guest DJ on KY102. The last day of his visit, we had a brainstorm to make him a neon sign. Whenever Joe came on the radio he would ask "HOW YA DOIN'?" Bingo – an hour later and we were all hanging out with Joe Walsh.

Closer to the end of the course Paris Neon got an order for neon for a theatrical event. I remember giant palm trees and fourteen-foot-tall flamingos in bromo orange or pink.

Facing an impossible deadline for the installation, Per went to Sears and bought everybody white button-down shirts, black sunglasses, straw hats and black spray paint. The straw hats were painted black and we all dressed up – I almost forgot about the black bow ties.

We were better than the Blues Brothers. We were neon men out to conquer West Fifth Street in Kansas City, Mo.

The glass was delivered to the site and placed on the lobby floor, protected by a cordon of wet towels, metal pedestals bearing fat red velvet cord, and other warning devices. Nonetheless someone crashed through not one but many units, and after repairs were made, only minutes remained before the curtain went up.



I remember standing on the ladder to install the last unit of bromo blue... knees knocking, palms sweaty...

I was handed the glass with these words: "If you don't think you can do this without fucking up, then say so and get off the ladder."

I honestly didn't know if I could do what I had never done before. All of a sudden I couldn't remember how to install glass.

I took a deep breath and became the glass. The last unit went up without any hitches.

It was then I knew why I really wanted to be a part of Paris Neon!

(More 12-volt, from page 4)

NP02C01210 (controlled)

Mfgr:	Tunewell Transformers Ltd. 31 Commercial Road London, N18 1TN ENGLAND
Telephone:	081-807-3671
Fax:	081-345-6770
Warranty:	2 years
Distributor:	Tunewell, Inc. P.O. Box 7043 Bloomfield Hills, MI 48302 (800) 736-6366 Fax: (313) 647-7162
Size:	4.5 x 1.75 inch diameter
Also available:	24-volt DC or AC input models.

Models:	**NPS-112-D2; NPS-112-S; NPS-112-D3-5**
Mfgr:	Bertonee 1827 54th St. S.E. Calgary, Alberta, T2B 1N5, CANADA
Telephone:	(403) 569-1500
Fax:	(403) 235-3339
Distributor:	Direct: contact Wayne Woodward
Price:	D2, $15; S, $25; D3, $15
D2 Size:	1.75 x 1.5 x 1 inch
S size:	2.75 x 1.5 x 1.5 inches
D3 size:	2.25 x 1.5 x 1 inch
Warranty:	90 days.
Note:	Has received CSA approval for in-home use

Model:	**"Fire Bug"**
Mfgr:	Information Unlimited / Scientific Systems Box 716 Amherst, New Hampshire, 03031, USA
Telephone:	(603) 673-4730
Fax:	(603) 672-5406
Size:	4 x .75 x .75 inches
Distributor:	Direct
Price:	$12.50
Note:	Outdated model used in testing

Model:	**TFT-04D-6000V**
Mfgr:	Transfotec International 381, Boul. Industriel, Suite 2 St. Eustache, Quebec, J7R 5R3
Telephone:	(514) 491-5671
Fax:	(514) 491-0905
Size:	3 x 3 x 1.75 inches
Price:	(Unavailable.)
Distributor:	(Unavailable.)
Note:	Also available: 7,500/20 and 9,000/20 models.

Mfgr:	**Focus**, Sweden (address unknown)
Size:	3.25 x 1.5 x 1 inch
Distributor:	None in U.S.
Note:	New model expected out.

(Pyrex-bending, from page 1)

finished glass is amazingly flat – one four-foot-diameter circle we saw could be set on the floor with scarcely room for a razor blade to slide under it. Now, most neon is viewed from the front and this doesn't particularly matter, but should you ever want such a flat piece... They're also fussy about no welds being visible: they have to be on the back of bends or doublebacks, never just painted out between letters.

The molten glass can be pushed around rather quickly (and, it seemed, rather easily, but we all know how looks can deceive). By this means the glass thickness on the outside of the bend can be built up to "bulletproof" standards, especially because pyrex can be worked into thicker sections without much strain.

Jimmy showed us a technique of "walking" a return bend a little forward by melting glass from the top of a bend down onto the stretched outside to thicken and strengthen it. Then he took the finished sample, set it on the floor and stomped on it. It broke, but not at the bend; the bend was the strongest part of the tube!

With pyrex the electrodes are never tubulated, and traditionally are prone to greater leakage due to differing coefficients of expansion between the glass and the wire. I asked about the rate of failure and Jimmy said it was maybe one in two thousand (better than most lead-glass electrodes, by my experience).

The procedure for attaching an electrode is unusual. They come with a couple of inches of extra glass on the open end. This is heated and pulled out with tweezers to a thin diameter a short ways past the shell (at a 45° angle), and then set aside. When cool, the glass is cut at the narrow point (about 5mm diameter). Next the end of the neon tube is sealed off by pulling out the glass and pinching it in, and when square a small hole (about 5mm) is popped in the side. The electrode is welded to this hole, and then the glass is heated up near the electrode shell and brought down to the bend, where it is blown out to proper size and height.

Colored glass is not used much, due to the torches burning so hot and (I suspect) the glassblowers' inexperience with stress-handling techniques. Jimmy said that as someone who knew how to work colored glass he got a lot of interest from shop owners when he was job-hunting.

But who says torches aren't everything? At one shop, Jimmy walked in looking for a job and the man got very excited – "This is great. You can teach me colored glass, and I'll teach you pyrex. I can learn English, and you can learn French." (Jimmy says he still speaks French "like Tonto speaks English. They used to look at me as though I were a dog who'd just spoken; now it's come along to where they only laugh at me all the time.")

The shop owner asked for a demonstration, and when Jimmy tried to turn down the flame on the bench burner, the man said it wouldn't work without oxygen. So Jimmy tried lots of settings but the best it would do was a yellow flame that wandered back and forth. He tried heating a scrap of yellow glass, and when he went to blow it he made a giant bubble. The owner showed him the door.

Looking back on that, Jimmy says, "I had only propane and oxygen in that wandering flame: it looked innocent, but we know now." In Paris he did work on colored glass – using a "standing lamp" with city gas, a tiny pilot and more air – with good results.

The hand torches used for most of the work (ribbon burners are also used, though not so often) are different from those I've seen elsewhere in Europe – they are a single-point, gas-oxygen-

(see France, page 10)

Asian neon: From homemade 'trodes to high-tech

By Val Crawford

Cairo was our first stop after Amsterdam, and we were grabbed by the lights even before we landed. As we gradually dropped toward the desert, constellations of green stars became swirls and stacks of lit tubes. I thought they were neon, but they're green-coated fluorescent bulbs strung up in geometric patterns high atop every mosque, on the minarets where loudspeakers wail the call to prayer.

But neon was everywhere else; leaving the airport at midnight we saw elaborately lit billboards at road level. Rooftop spectaculars define the main plazas: you know you are Somewhere by the electric panorama. And although the bending and wiring tend to be rough and the tubes are often stained, the sweeping and fluid Arabic script, imaginative borders and snappy animation, and the sheer scale of the signs outshone what we had seen in Europe. Cairo by day looked drab and sun-baked, endless crude brick and concrete buildings, but at night the neon was all the more emphatic because it was the only light; few streets had streetlights, fewer windows let light out through wooden shutters.

We kept asking the friendly people who approached us if they knew of any sign shops, and we kept getting the name of the most famous electrician in town. He was hard to track down, but we did it via hours of sun-baked wandering in an un-touristy area. But once we got there and explained to Mr. Mohhamad Moustafa Ali that no, we didn't want to buy light bulbs, he kindly referred us around the corner to a real neon shop, the Arab Neon Co.

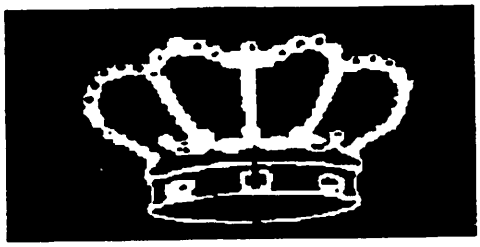
We saw a neon shop with its own prayer room, and another with barefoot benders, along with a cold-cathode shop and a car-neon factory.

It probably startled them to get an unannounced visit from a strange magazine they'd never heard of, but we were invited in anyway by workmen wearing traditional long cotton gowns (cooler than pants in the desert heat, guys). Inside the windowless old shop, past the prayer-room, Lionel kept grabbing at cruddy surfaces from his stroller while we gawked at amazing home-made electrodes, a truly ancient bombarder, strange torches, odd equipment everywhere, and an older bender making a series of straights factory-style, with a benchful of welds to go. Translations were difficult and we never did learn if it was soda or lead glass they were working with; they did say it was supplied precoated by an Egyptian manufacturer.

The nervous nephew who spoke English kept begging us to send him electrodes, complaining of the difficulty and expense of importing them. He held up a Masonlite 'trode and said "We used to be able to get these. But now we can't!" Yet when we mentioned the price we pay at our shop, he said, "Of course, we couldn't pay that much."

Bangkok was harder to love, and that's putting it mildly. The World's Hottest Major City was mostly ugly concrete – smoggy, traffic-gridlocked and full of hustlers and heartbreaking child beggars, as well as too muggy to really enjoy exploring – so after a few minutes of dealing with a stroller on those crowded streets, the hotel pool looked better than an ornate temple.

But we did visit a neon shop, thanks to Vithaya Lowhratnasane, the owner of Bright Neon Sign Advertising. What really struck us there was that the benders were all barefoot on the gorgeous teakwood floors (as were we; everyone took off their shoes at the stairway, Thai-style, and we tenderfeet carefully plotted our path around visible shards of glass). The shirtless benders were young ethnic Chinese working diligently on a Sunday morning; long hours were clearly the rule. The tubes they were bending – all American glass – were mostly straights done factory-style, and the bombarder was made of multiple 15,000-volt transformers wired together in parallel (wires everywhere). The whole shop wasn't much more than 12 by 12 feet, with four workers.



In general, we weren't impressed by Bangkok's neon; perhaps, as in Manila, the prevalence of extortion makes neon just another business liability ("It'd be a pity if something happened to that pretty pink, eh?") – at any rate, most signage was plastic or paint, and what neon we saw was crudely boxed in wire mesh or plex. Although the famous girlie bars did indeed have neon outside, it tended to be ugly, badly bent and poorly wired; the much-photographed doorway surrounded by animated lips opening and closing was the only notable piece. One disco had a lot of neon indoors, but we didn't want to stay in that part of town late enough to see it lit up. (In fact, the most nightlife we saw was when we walked around the tourist district for two hours late one night after Lionel broke his front tooth on the swimming pool. We resembled a modern nativity scene: exhausted parents carrying a sleepy child down smoky streets past noisy open-air beer halls and bars, looking for an all-night hospital. We were glad to leave Bangkok.)

Hong Kong is, no question, neon heaven on earth. Las Vegas may have its monumental pieces and mesmerizing animation (banned in Hong Kong, due to the central airport and related fears of pilot confusion). But Hong Kong's dense tangle of signs must represent at least ten times as much footage, and a lot more great design per square mile of city.

Every neon fan should go there. Even staying in the worst hotel ever (and that's saying a lot), and moaning about higher prices, we happily rode the double-decker trams and buses, snapping neon pictures evening after evening, and rode the fifteen-cent harbor ferry and the Peak Tram to see the city lights from other perspectives.

But the big rooftop spectaculars weren't as amazing as the "ordinary" signs that are strung right across streets, blocking each other like laundry lines, one after the other. And the five-story-tall vertical signs in front of every restaurant, nightclub and store, most with gorgeous backgrounds and borders, the Chinese characters completely filled in with precise straights to keep the solid, "painted" look of the lines. We shot dozens of different neon fish, roasted ducks, flowers, waves, and a mural of a sleepy neon fisherman under a neon weeping willow tree whose detail would blow your mind. Like everything else in Hong Kong, neon is hotly competitive, so every business wants the best and the brightest sign it can get, and every sign shop has to offer something unique for a very low price.

We had two neon connections in Hong Kong, and visited a very impressive shop, Far East Neon Light Co. Ltd., that specializes in prestige projects and spectaculars for all over Asia (it must be wild to install in old Tibet; we saw pictures of the Lhasa Holiday Inn signs they did). The general manager, Eddy K.P. Yeung, said the company was just about to install some spectacular computer-animated color-changing cold cathode atop the newest skyscraper in town,

(see Hong Kong, page 8)

(Hong Kong, from page 7)

although a plan to outline the whole building in neon was rejected as too expensive (check out the proposal drawing in Contemporary Neon).

Unfortunately, the neon spectaculars that make the harbor view so famous are falling on hard times. As expensive prestige buildings decide that they are too hoity-toity to house a neon ad for someone else, the rents for a decent rooftop have hit 10-12 million Hong Kong dollars per year (US $1.5 million).

But there are innovations that are good for neon, too. Paradoxically, while everyone else in Hong Kong dreads 1997 because China will then control the colony, neon people can't wait – because a new airport far from town will permit neon animation at last. Also, because Hong Kong's skilled benders make a good wage compared to most workers, they are expensive enough that many companies (including Far East) make their neon over the border in China, where huge shops of fast new benders kick out more and more tubing for a much lower cost.

Far East's Hong Kong shop produces only cold-cathode, and the two older benders we found there were fast and accurate, slamming square bends onto the straights. The benders had had overseas experience, and the shop had a Masonlite pumping station and American torches. It was large, considering Hong Kong's crowded conditions; but then, much of the bending had "moved to China."

The other neon business we visited in Hong Kong, D&A Electronic Neon Light Ltd., wasn't a neon shop, because it was a front office for their factory in China as well as a major neon supplies manufacturer (your glass tube supports probably came from them).

We tried to wrangle a visit to their factory, but time was short and their managing director, Arthur Chan, invited us to visit on "some other trip." The Chinese shops we saw photos of looked new, huge, and outfitted with good pumping equipment. The statistics never failed to impress us: how much neon they made (by piecework), and how low the wages were. The future of Asian neon was in China, we were told: Chinese kids want to learn lucrative trades like bending, while Hong Kong kids don't want to work for years to learn something hard, dirty and sweaty when office jobs have more status.

However much the bending changes, installers still work the old-fashioned way, from shaky-looking bamboo scaffolding. Eddy Yeung insisted that except for an occasional middle-of-the-night boom-truck hoist, his workers found it easier and safer to work from bamboo poles lashed together with plastic, at any height, right up to the top of the skyscrapers.

There are two types of neon operations in **Taiwan** – those for the export market and those for Taiwan businesses.

For the export market we heard much the same as in Hong Kong: competition is fierce and the winners are producing in China and importing the tubes from there. Apparently the competition has narrowed from dozens of neon producers to a few larger ones. Wages and the cost of living are rapidly approaching those in the U.S., so labor is found cheaper elsewhere.

And for the domestic market, it's the same as Hong Kong: there is little prestige in it and younger people aren't taking up bending.

(see Taiwan, page 9)

(Sex, from page 3)

my apprentice and the installers too. Everyone had a different answer, each putting the blame on someone else, mostly on me. I was sure the tubes weren't bad: I had a new vacuum system and they were great coming off the pump and burning in. So I stuck to my guns.

I was feeling the heat, because someone's head was going to roll. Then a pattern appeared: It was only the end units on the transformers that were going dead. But the installer was still swearing it was the tubes. I was still defending my work. After a while, it was figured out: they were arcing to the foam covering on the building, which was holding moisture.

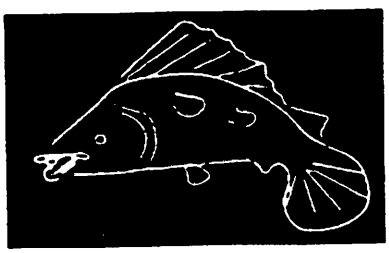
Once, when I was still fairly new to the trade, I worked for a company with the most jury-rigged plant I've ever seen. I just couldn't get a good tube off of the pump. No leaks anywhere, I changed the pump oil and flushed it. Still bad tubes. I figured the pump was shot.

The owner didn't agree. I was fired. A week later, the new male bender had a new 1402B Welch pump; the old one had given up the ghost.

I did get my job back, but no apologies.

I've experienced a lot of this type of treatment over the years. It seems to be a lack of confidence based on gender. I got mad enough once to ask my foreman if I stuck a sock in my pants, would he listen to me then? That went over like a lead balloon, but I sure felt better.

Well, girls, my best suggestions for getting your foot in the door are: Send your resume with only your initials – this way you know it will get read. When you go to an interview, go dressed to work, but neatly. You don't have to wear sackcloth, but don't wear tight clothes. My best response to a worried owner is "I don't intend to create any problems, and I don't expect to have any problems. I'm here to do a job just like anybody else. I don't expect any special treatment or unwarranted attention."



Once you land the job you've got to have an idea of how to get along in a "man's world," and what you're going to do if discrimination or harassment become an issue.

Since you are in a "man's world" you've got to realize they're not going to change for you. You'll hear dirty jokes, stories about weekend conquests, and they will scratch and fart. So get used to it. If the jokes get too rank, just say, "It's a little too raw for me," and excuse yourself from the group. I only make a stand if the jokes get personal.

You don't need a sledgehammer to kill a fly. Usually saying something like "You wouldn't want someone to speak to your mother or sister that way, so please don't speak to me that way" works.

If someone asks you out, bow out gracefully, saying you don't mix work and pleasure; don't end up a Monday morning conquest story. I've found that being a "sister" helps me. It won't take long until they're asking you what to get their mom or girlfriend for a birthday.

My best hope for women in the field now is that over time you gain respect for your judgement. Over the years I've had to choose for myself when to make a stand and when to let things go, and in 16 years I've had some bad experiences. I have chosen to share this in hopes that it will help others understand how ugly discrimination and harassment are.

But what isn't written here are all of the wonderful experiences and true friends I've made. There is not enough room in this whole issue to record half of the good. Just like the rest of life, there's always a little bad with the good. How happily you live depends on which one you focus on.

So guys, don't focus on the reason you don't want women in the shop. And gals, don't focus too much on finding discrimination in every action.

Then everyone can get along.

Gild it, glue it, grab it: Hot hints from Candice

By Candice King

Two more for silicone addicts:

1. To keep the edges of metal screening (the kind that covers your pattern and keeps it from burning) in good shape, do this: use two-inch-wide masking tape and wrap one inch on top, fold it on the edge and wrap one inch under. Before wrapping them, lay a bead of silicone on the edge of the screen, and press it flat with the tape when wrapping. This way, when the tape wears off the silicone is still there and the screen won't unravel.

2. As a cushion and "anti-spin" device for mounted tubes (such as straight border tubes, where the electrodes rotate down over time), take a scrap piece of acrylic sheet and lay thin silicone beads on it. When they are dry, pull them up and cut them into short pieces, and lay them on top of the tube supports during installation. (Note: keep these in a bag, otherwise they are dirt magnets.)

One old-timer's rule of thumb for **filling warm tubes**: to know the gas pressure for a given size of glass, subtract the tube size (in millimeters) from 24 for red, 22.5 for blue.

Never strip powder from a tube by pushing something through. I saw a guy's hand get trashed when the glass broke.

Never strip powder from a tube by pushing something through. Instead take tie-wire and pull something through. I saw a guy's hand get trashed when the stick of ruby red broke and glass went into his bone joint – he was in the hospital a week because glass was all the way down in the joint. There's little blood in joints, so intravenous antibiotics were needed.

Don't try this dep't: I knew someone with a homemade copper manifold, and when neon-filled tubes would turn out blue from too much mercury in the manifold, he'd set a big bag of ice on it and open the tip of the system, putting his finger over it and then off, to suck all the mercury down to the forepump. (I didn't have the heart to tell him that it would ruin his forepump, he seemed so proud of it.)

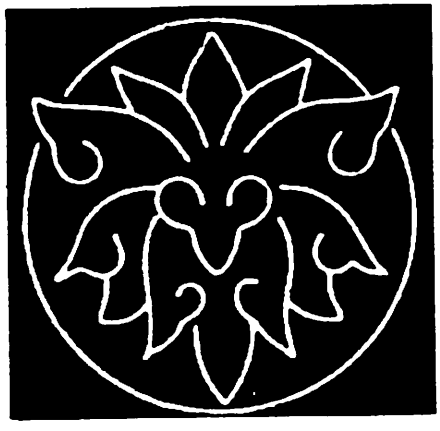
For glass marking, use Berol china markers in these colors: Brite Blue #167T, Brite Green #176T. (These don't burn off in the flame, but will rub off when done.) Also, some benders use "Stabilo 8008" pencils (made in Germany) but they won't go onto hot glass.

Also, there is a **gold suspended in oil** that fires onto glass. It's great for signing your work. You use a calligrapher's pen with it and then slowly sneak it toward the fire till it turns gold. Try it. See your local ceramics shop.

My old boss could never get any glass bent because the phone rang all the time. He found a **hands-free phone system** with a headset so he could bend and talk at the same time. It's a real money-saver for the small shop.

If your **ribbon fire has a hot spot** at the throat end, or the center if it's a 24", stuff a piece of wadded-up screen in the throat above the economizer. It diffuses the air and helps it. It also helps the howl, if I remember right.

If you have to seal on a 90° 'trode by hand and the heat rises and **burns your hand**: Cut a three-inch square of Nonbestos, poke a hole in the middle and put it over your electrode holder. It forces the rising heat around it and away from your hand.



(Taiwan, from page 8)

The difference is that much of the work is being done by small, extremely low-tech shops for a low price, usually about a hundred bucks per sign. So although neon signage is much in evidence, the quality is very poor. Much of what we saw was crudely bent, badly stained and with atrocious wiring – and we saw little blue tubing, probably due to intolerable staining with their bad pumping systems.

Taiwan is historically and physically close to Japan, so we saw lots of Japanese neon influence: big animated spectaculars that ran through complicated dances of five to ten patterns, and little strobe lights inset into neon signs to blink like stars. The arena-size, ultramodern train station in the heart of old downtown (I remember the old WWII-era brick one, cruddy and crowded) even has a giant TV screen, along with its braille signage and special floor-tiling system to direct the blind to the ticket counters and warn them of escalators. Lionel took the lumpy yellow tiles as his path, and we ran him around the huge hall to let off steam.

The entertainment district was thronged with teenagers, and many of the brightest-lit streets are reserved for pedestrians. There we saw some of the world's worst installation technique. Competing for top honors here: 1) the neon mounted directly above a restaurant kitchen's grease-exhaust vent, which collected furry black soot an inch deep on half the sign, and 2) another large sign where dozens of characters hung like laundry from a crude metal grid, where they were bright but unreadable from the other side.

Our neon host in Taipei, Arthur Chen of Beason Enterprises-Ritzy Trading, took us on a whirlwind tour of three shops. One made beer signs and neon "posters" for export, but its benders were temporarily working at the company's factory in southern Taiwan, so no one was bending there. Another sign shop specialized in spectaculars for export, with huge stacks of straight tubes being made inside and a stunning collection of strange-looking old transformers stacked outside.

The third, Hwa Mei Neon Sign Co., has branches in Shanghai and Tokyo, as well as the new factory we visited in a Taipei industrial park. We saw "Tropical" brand neon licence-plate holders being made for export to America (wholesale cost $15 each, including transformer; they were shipping ten thousand per month when we were there).

The noise of the ultrasonic plastic-press was a deafening squeal, and the curing racks held dozens of uniform pink and blue rectangles. This company had its own powder-coating facility, and that was the only part of the plant we weren't allowed to take photos of; one manager didn't even want us to see it, although it had nothing unusual compared to other, larger coating plants we saw in Europe.

On the other hand, some coated glass we saw elsewhere looked like it came out of someone's kitchen: lumpy, flaking, too thin, and stained wherever it met heat.

One window sign right at eye level inside the otherwise-glitzy World Trade Center was badly coated, bent and wired; it was pointed out and described as typical by Jackson Ling, president of Enhance Industrial Ltd., a neon supplies company there.

So all of you worried about the big, bad Taiwan neon factories can stop worrying; think about China instead! (Actually, we've heard from a knowledgeable international source that one major quantity sign producer has stopped ordering from Taiwan because it had to prepay in full for containers that then arrived full of broken glass.)

All in all, it was a fascinating trip, and we arrived home enlightened, impoverished, exhausted and happy to see the last of hotel rooms for a while.

Bimbo neon: Tiresome trends, witless words

By Val Crawford

Sometimes I think neon people are most at Home on the Range: seldom is heard a discouraging word. After all, neon is so cool! Neon is so cosmic! If it lights up, it sells! If it's in public and cost a lot of money, it's a design masterpiece!

It's time for a discouraging word. Namely, according to one worldly neon designer we know, "This is going to be the death of neon."

What is this deadly threat? Only a pretty book: "The Best of Neon," edited by retail design writer Vilma Barr.

Why is it a threat? Because it's... it's... *bimbo neon*. Vacuous. Overdone. Cliche. Passe. Dumb. Everywhere are neon-outlined skylights, fake rooflines, columns and more columns, atriums, plaster figurines, all slashed or mechanically traced in neon. It's old already.

Try this for Essence of the Eighties: "A new Egyptian-style monumental entry portal" – a concoction never seen in Egypt, believe me. Or this: "The use of neon in this upscale health club communicates energy, movement and space ... (and) sends colorful visual cues to patrons." Cues?

It's this kind of marketing-speak that shows who's really in charge of this neon – not neon people, but people who use neon. As in: "Designer Ray King's hovering, planetary designs are mathematically calculated before the light source is added." Golly! A real deep thinker! But neon design typically doesn't "add a light source" at the end of the process as an afterthought, does it?

The author does mention the people who make the neon, but as mere skilled hands, not in a creative context: "One of the keys to a creative, productive design process and a top-quality finished product is a close collaboration with the fabricator. Neon fabrication is a true craft... The designer orchestrates this process and sets the team's creative pace." So don't ever forget the designer is god, no matter how little they know about neon.

Some things Barr's just plain wrong about: "In past decades, neon for stores and shops had been relegated to the name of the establishment in the window." Oh? Exterior signage and spectaculars didn't exist? "Starting about 1985, store planners and architects began to use neon as a technique to communicate to customers the merchandising image and point-of-view in stores and shopping centers." This statement shows a fatal ignorance about the far more outstanding neon designs of decades past. But what do you expect from someone who refers to "tubular neon," (is there any other kind?) and who professes amazement that neon is still hand-made!

Well, regardless of what you expect from "The Best of Neon," what you get is a lot of the same interior-designer prose. "Signature elements" are things you notice; hallways are "transitional spaces"; and "As a marketing tool, neon can either make a bold overall statement or provide a pleasant touch of theatricality." Actually, neon isn't an either/or of boldness and pleasantness. This book just lacks the insight to take neon beyond Trendspeak.

"The classic approach" is certainly a misnomer when it applies to the usual cheap plaster reproductions of Greek art slashed with a thoughtless line or two of neon. Particularly hideous is a "discus thrower" with double rings of neon around his head and his discus, connected with a meaningless line so it looks like giant spectacles dropped on him. Where is a line that accents the figure's movement, a swoosh of power?

More cliches are found in the several pages devoted to some upscale McDonald's: "Neon creates the illusion of a kinetic 'cosmic' sculpture within the walls." (How many oxymorons can you count here?) Or: "The ruby-red neon in the facade of the granite serving counter suggests a hearth-like glow." (It doesn't.)

Technical consultant Wayne Stratman kept the author out of most mechanical trouble, but several photos show lousy technique. There's ugly stretched powder (page 121), extensive staining (page 196), and disjointed lines all over the place, like the wobbly tubes poorly mounted on a fancy Italian boutique.

On the bright side, there's some breathtaking stuff among the dreck in the 400-plus color photos: The massive, stately Fox Theatre marquee in Detroit. The Nintendo animated neon "igloo" with figures racing around the ring in space. The interactive neon mural in the Hong Kong science museum. And the Neon Garage is neat, though the prose sucks: "Parking becomes a neon interaction: Neon becomes part of a participatory art experience at the Neon Garage." Yeah, you park your car there. That's interaction?

And there's plenty of good photography. (I'd like to know how to catch the precise fat haloes some photos show; if anyone knows, please drop a line.) But blues still tend to wash out in many pictures, and poor color and brightness reproduction turn "red and blue" into pale pink (page 169).

The book even mentions some good ideas, like Florida's "Night Beautiful" contest, and the walking cows in Austin, Texas, where the tubes themselves move, as traditional animation is banned.

My point isn't that Barr assembled a bad book, only that hers is a rather narrow interpretation of "the best of neon." So although this may be a book that your customers will love – and that you should study – it's best if you stay a little skeptical.

Look for inspiration elsewhere: other countries, cheaper books, older signs, lighting design magazines, art glass. The $60 that this book costs could get you a lot more for your neon bookshelf (I'd opt for subscriptions to Japan's Popeye and the Dutch-based International Lighting Review, for starters).

And if you do buy it, don't buy into it. Don't let your eyes glaze over, don't be seduced by these retail-marketing cliches; they won't last. Or if they do, they really might be the death of neon.

(France, from page 6)

air torch with handy thumb controls, and of course put out a very hot flame. They are manufactured by: LeFevre, Rue Amelot, 75 Paris; phone 34166235.

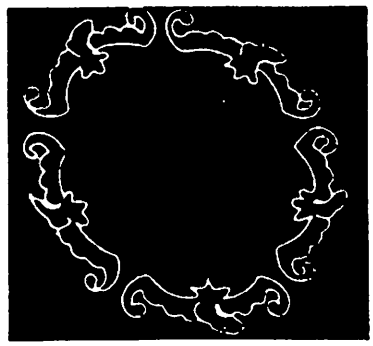
When working with this high-heat glass, eye protection is mandatory. Both the naked flame and the molten glass can singe the retinas of benders and onlookers, and everyone in Jimmy's neon shop wore protective glasses, including visitors.

A drawback to using pyrex is the cost: electrodes and clear glass generally run about four times the price of the same in lead glass, plus each bender uses half a bottle of oxygen per day. Precoated glass is over twice the price of clear.

Should you be planning a visit to France and wish to see for yourself, Jimmy welcomes visitors. He also can guide you to two Paris neon shops of particular interest; one uses a two-meter-long ribbon burner, with one bender at each end of the tube, for long curves. Write him at

La Bernasiere se
St. Georges de Montaigu
85.600 FRANCE

(He is a great fan of Mexican food; any traveler who brings him dried chiles, mole paste or even tortillas will be warmly welcomed.)



(Bats are considered lucky in China.)

THE LIGHTER SIDE OF NEON

The world's worst bender: is it YOU?

By Audie Foote

I was walking through a mall one day when I saw what might possibly be the worst neon sign I'd ever seen. It was that increasingly not-so-rare combination of bad design, poor color choice, atrocious bending, hazardous mounting, and (surprise!) it flickered. At least I think it flickered; it was so badly mercury-stained that I couldn't say for certain that it was lit.

I thought to myself, "My god! Somebody actually MADE this monstrosity! And even more unbelievable than that, someone probably PAID for it too!" The worst thing about it was that it looked less than a year old. The highlight of this masterpiece was a fourteen-inch-high letter "O" which had nine welds in it. Nine.

It was as if the bender wasn't capable of performing more than a six-inch ribbon bend, cutting it, and welding it to the next six-inch section until he, she or it had a "complete" circle. The sign was so bad that even the bugs weren't attracted to it.

I felt sorry for the guy. He went through a lot of trouble to get everything you need to make neon. He just forgot to LEARN how to make it.

So while I was standing in front of this window, shaking my head in wonder and disbelief, a friend of mine sees me and says, "Hey, Audie, how you doing? Is this your latest neon sign? Not bad!"

Which just confirms what I've always said about how the general public's knowledge of neon could be summed up in one word: zilch. Amazingly, the sign did not look THAT bad if you looked at it from a distance (the next mall?) and you squinted your eyes a lot.

So why am I telling you this? Because somewhere out there, lurking in the flickering light of bad signs, is someone who we're all competing with: THE WORLD'S WORST TUBEBENDER. This person must be found. I am therefore asking all of you to be on the lookout for and to report to me any benders capable of making a sign like that described above.

I'm not suggesting that this person should be hunted down or made to suffer cruel or unusual punishment – I just think that some special recognition is warranted, comparable to that received by the person finishing last in the marathon, or holder of the lowest batting average in the major leagues, or the last person to be eaten by the Donner Party. You know, kind of a good-natured consolation prize. Some people find comfort in the fact that there are people out there who do things worse than they do.

Well, without mentioning any names, I am proud to say that I have met a candidate for this award. And this is a true story:

It was while I was traveling that I saw an ad in the paper for "neon equipment" among the items at a garage sale. So I called the guy, and sure enough, he was selling all his neon stuff, which he said was "a complete neon manufacturing plant." Well, it sounded like I might be able to pick up a back-up vacuum pump or maybe another bending station or at least some glass for cheap.

I should have known something was amiss when I asked the guy, "How do I get to where you are?" and he said, "Gee, I really don't know..." and a long silence followed. I said, "Uh, I have your address from the ad, and I'm at the gas station on the edge of town. Am I close?" And he said, "Relative to what?" The New Yorker in me blurted out, "The third moon of Jupiter," and he said, "Excuse me?" "Never mind, I'll find you."

One hour and many expletives later I drove down a bumpy road to what looked like a misplaced apartment house, and I thought, "There's no neon shop here." I started to turn around, but I saw a man walking frantically toward me. "Are you the guy gonna buy my neon plant?" Well, I asked, where do we have to go to look at it? "It's right here in my apartment."

I figured he was storing the equipment there because he had said something about leaving. WRONG. Lo and behold, when I walked into this guy's one-bedroom apartment, I saw high-voltage wire strung across the kitchen by the ceiling, and where most people have a Mr. Coffee machine, this guy's got what could only be some strange kind of neon manifold. And as I looked around I saw a bending table (formerly a dining table), glass and electrodes, and I noticed the wonderful scent of uncombusted (leaking) propane gas. Instant headache. Not only did he have a "neon plant" in his kitchen, but as I looked around I noticed that among tons of other junk the guy had a jet-ski and an ultralight airplane (the fold-up kind with the lawnmower engine) right there in what would have been a living room.

"Oh, I haven't introduced myself – I'm Jerry" (we shook hands) "and welcome to my shop. I'm sorry things are a mess but I've been sick with infectious hepatitis for months" (I drop his hand). He handed me a card for Jerry's Complete Neon Service and offered me a beer – Uh, no thanks... gotta run...

"You know, I really feel honored to get a visit from a veteran neon maker such as yourself – you're the only guy in the profession who's ever visited me here. You sure you don't want a beer?"

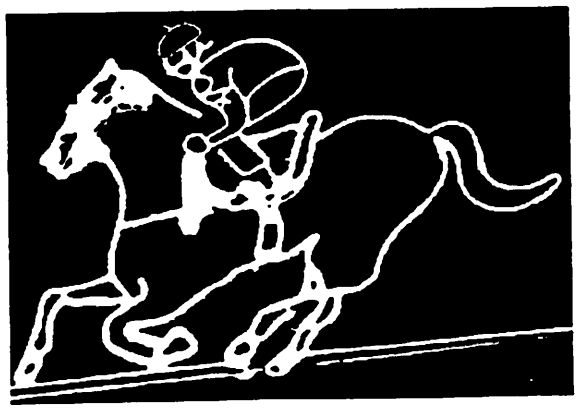
I break into a claustrophobia-induced cold sweat. "No thanks; the gas smell is making my head spin."

"Oh, you'll get used to it. The neighbors used to complain all the time but I haven't heard from them in weeks." They're probably dead, I thought.

I looked around and saw broken glass on the floor and big mercury drops on the table. He also had the wierdest-looking cat I've ever seen, a part-Siamese with crossed eyes who kept staring at me as if to say "Leave while you still can, you fool."

Good idea. I needed fresh air... "Here, let me fire up my rig." He plugged in his air blower, which looked like the bilge pump from the USS Merrimac and sounded like a garbage disposal.

Ordinarily I would have stayed there for a while, just out of morbid curiosity, but the gas, the noise, and the look of this dude had me inching toward the door.



"Where you going? You just got here. Here, let me show you what I'm working on" – and he holds up what looked like a fourteen-inch circle with about nine welds in it. Where have I seen THAT before? I said, "I saw a sign where I live that was made just like you made this letter. It couldn't have been you, could it?"

I could see he was proud of this man-

(see Audie, page 12)

Safe and sane supplies

Our favorite reliable anonymous source suggests two books: "**Neon Principles**" by Randall Caba of Portland (good for beginning benders, available from Signs of the Times) and "**The Laboratory Handbook of Materials, Equipment, and Technique**" by Gary S. Coyne. The latter goes far beyond bending, and is available from Wale Apparatus, catalog number 16-1800, for $45 plus shipping and handling.

The same source also recommended mercury safety products from **Lab Safety Supply**. The catalog he sent has four pages of cleanup, spill control and detection stuff, from inexpensive vapor detectors right up to vacuums for thousands of dollars. Ask for a catalog; if you read it closely, you may think twice about the way you toss all those poisons around in your shop. Lab Safety Supply in Janesville WI: 800-356-0783, fax 800-543-9910.

There's also a mercury cleanup powder called **HgX** from **Acton Technologies** (100 Thompson St., Pittston PA 18640); this can be used dry or in solution to wash surfaces and flush closed systems (the literature doesn't say what it leaves behind in the system, however). It does note that the compound corrodes some metals, and that you shouldn't handle it without rubber gloves.

We haven't checked this one out ourselves, but in the scientific glassblowing magazine Fusion is an ad for "surplus glass shop supplies" from **Pope Scientific Inc.** of Menomonee Falls WI. Stopcocks, joints and glass tubing are among the items mentioned. Fax them at (414) 251-7387 or call (414) 251-9300 for a list.

(Audie, from page 11)

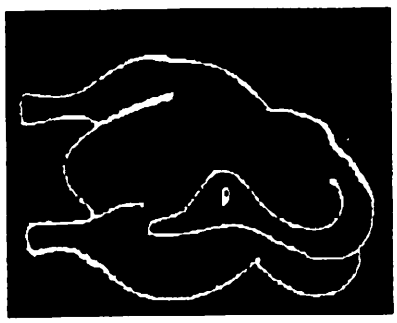
gled letter, as he kept holding it up for my inspection. His welds reminded me of a head-on collision between two dump trucks: all bunched up in the middle. "Whaddya think of it?"

At that point I felt like I was going to throw up, which wouldn't have been a thoroughly dishonest answer to his question. But then the New Yorker in me kicked in again and I actually felt sorry for the guy. He obviously went through a lot of trouble to get everything you need to make neon. He just forgot to LEARN how to make it.

Did he make the sign I saw? Could there possibly be two benders in the world that bad? Unfortunately, the answer is yes, because he then admitted to me, "I've never made even one sign. I've had this equipment for a year and no one will pay me for anything I've made. That's why I've got to sell all this stuff."

Well, as much as I wanted to run out of that house, I stayed there and talked to the guy about neon schools and the sign business in general. I think I even petted the poor cat. Fortunately, he seemed resigned to unloading what he had and moving on to other endeavors.

I looked over at his airplane and thought, "I hope he flies that thing better than he makes neon." Is it possible that one person could be the world's worst tubebender as well as the world's worst pilot? Not for long, I'd imagine. But if the neon business has taught me one thing, it's that people who own and run glass houses shouldn't throw stones.



Nonetheless, there you have it: my nominee for the World's Worst Tubebender award, or "Tweebie" for short. Please mail your entries, or any stories of horrible neon you've seen, to me via this publication.

The Tweebie will go to the world's worst tubebender someday, and who knows? It just might be YOU!

Not quite a love letter

<Editors' note: We had a spirited exchange of letters with one favorite reader who desires to remain anonymous but had some excellent criticisms of past issues. Here are his points, and our corrections:>

"...There is no one who believes in the free exchange of ideas more than I do. But there have been articles printed lately that I believe do the neon community a great deal of harm.

"Example 1: In #9, Tom Fling uses experiment to justify short tubes. This is bad science – his results are based on testing a cold (ambient) tube. This has nothing do to with what happens in a hot (bombed) tube. Having done this experiment (both hot and cold) in a hot tube (twelve feet, 15mm), the pressure equalizes within four seconds. His conclusion seems quite wrong.

"Example 2: In #11, the 'Build an electronic choke – but be careful!' story is downright dangerous. It doesnt take a lawyer to realize the potential liability of this story.

"Example 3: #11 gave a repumping technique – washing mercury down the sink. Where the hell do you think it goes? Promoting this as a 'tip' is immoral.

"There needs to be some editorial restraint when the articles are 1) wrong; 2) personally dangerous; or 3) (Christ, what can I say? I had to talk my girlfriend out of calling the EPA)..."

<From Ted's response:>

In general the Neon News takes all comers, prints all opinions. . This is a forum. We're not presenting the way to do things, but what this particular person thinks is a good thing. You as an interested reader then pick and choose.

On Tom Fling's article recommending pumping shorter tubes – I ran that article because I thought it was interesting (it came as part of their general literature and we asked to use it). Now, the whole point of a "free exchange of ideas" is that you exchange them! Your test results should go in print. We are not a testing facility nor a vacuum-science lab; don't expect us to verify everything. A reader who is interested can then run their own test, to conclude either as Tom Fling does or as you do.

As for the electronic choke – I'll defend forever the right to put out that kind of information. There are plenty of people around who have the know-how to safely put together a device like that. You can buy the unpatented commercial equivalent for $850 or you can build it yourself for the cost of two transformers and a variac. I mean, if you're worried about people hurting themselves as a result of "do it yourself" articles what about the "saltwater choke" article, or the "30 kilovolt bombarder" article? (By using information from all three articles a person can build a far superior bombarding system for about $600; you would have someone pay $3,000 for a commercial unit?)

You're absolutely right about the hazard of mercury going down the drain. It was an oversight for us to not to at least mention it, or perhaps recommend some kind of "filter" (a large container for the water to pass through, the mercury settling to the bottom, say). Also remember that this advice was for a certain – relatively rare – situation, and not for daily practice.

<Postscript: We got a nice letter back and even won him over on one point, "I now agree with you on the electronic choke deal." Moral of the story: We make mistakes, but we welcome corrections (and shy critics who don't want their names used).

So don't be afraid to write.>

A neat rope trick

Another good idea from the Paris Neon course, noted by **Edward DeZuzio**:

"Per Wallin came up with a good idea to help us better understand what the glass should look like while and upon completion of the bending process. The tool used is made of two 6.5-inch 5mm tubing segments with polished edges and one length of rope, thirty inches or less. The rope should fit snugly within the tube; waterproof nylon works well.

"Slide the glass over the rope or slide the rope into the glass (...whatever you're into). Melt the end of the rope and flatten on the bench to prevent a constant need for rethreading.

"To use the "Paris Device," just consider the flexible rope your glass. You can put it on the ribbon burner for a few moments and use it to measure out your glass before you bend. You can also use it to experiment with different styles of bends and how each makes up the whole."

<Val adds: Another nice surrogate is the soft clear plastic tubing used for medical applications (oxygen, IVs, etc.). Thanks, Mom!>

NESA neon blowout

Our big brothers at Signs of the Times are planning great things for neon people who make it to NESA, and they've invited us to help with ideas and willing hands. We could use more of both, if you're so inclined, and it already looks like good times will be had by all.

Some ideas so far: an informal meeting like the 1991 Bitch & Bash in San Francisco looks most likely, with videos and demos and "neon tricks"; also possibly a "stone soup" collaborative sculpture. Other brainstorms include a take-all-comers neon slide marathon and photo swap meet; party games like "Pin the Electrode on the Designer" and a real neon pinata to smash; and a karaoke marathon where benders perform all the songs with "neon" in the lyrics.

Seriously, an exchange of good neon photos and/or slides could be a good thing for all involved. Bring a few dozen reprints of your best pieces or hometown classics to pass around and trade. Make sure they are clearly marked with your shop name and phone number so you get all the glory. Photos and slides of horrible wiring (not yours, of course), repair/restoration before-and-afters, or other neon curiosities are welcome too. And if you have other NESA ideas or want to help, give us a call.

Mystery history

<Ted asks:> In the course of restoring old signs I've come across the following brand names – does anyone have any information on these companies? What did they make, when did they go out of business?

Thordarson Electric Mfg. Co., Chicago. (Transformers: real classic black beauties, with a ceramic screw-on cap that insulates the high-tension terminal after the GTO wire is in place.)

Sola Electric Co., Chicago. (Transformers).

"Supra" precoated glass.

A dim view of turbo pumps

Commenting on pumping systems in Europe, **Dick Boonstra** of de Blaecker (Rotterdam NL; a distributor of neon supplies including Neon Products electrodes) sent a page from the Leybold (German high vacuum company) catalogue that he says "...shows clearly that the turbomolecular (TM) is not ideal for making neon when using a bombarder, but it is a suitable pump for oven-pumping.

"The TM pump does not have suction power at the moment that it is most needed, the moment when outgassing is greatest. That is, at the end of the bombarding procedure (activation) where we go over to high vacuum.

"At that moment the pumping speed of the TM is zero. The pump begins working at 10^{-3} millibar, which is the point where we end our process before backfilling. During the whole process from bombarding to backfilling, the pump does not come into its operating range.

The TM pump does not have suction power when it is most needed, when outgassing is greatest... Thus a TM pump is an unacceptably high investment.

"Almost the complete pumping speed depends on the quality of the low-vacuum pump. On the other hand, most diffusion pumps are already in their working range at one to five millibars, and so have great pumping speed at these pressures.

"If you see this, then the price/performance ratio for a TM pump is an unacceptably high investment. Also according to Leybold, every time the pump is switched off you must rinse it through with dry nitrogen, otherwise the bearing oil will contaminate the pump and manifold. Thus the TM pump, if handled incorrectly, does exactly what its proponents blame the diffusion pumps for: backstreaming into the system.

"And an inrush of atmospheric pressure, such as an implosion with glass splinters, will destroy the turbo rotor and stator blades completely. Protection filters to prevent this will decrease the pumping speed by more than fifty percent, and they must be cleaned frequently as well.

"TM pumps are ten to twenty times more expensive than diffusion pumps, the performance they deliver is unnecessary, and they are far more critical in terms of handling and potential breakdown.

Also the frequency converter for TM pumps is a very expensive and unreliable part of the system; the more complicated the pumping table is, and the more changes that are made to it, the greater chance something will go wrong.

"Sixty percent of glassblowers in Europe are working with mercury diffusion pumps. Thirty percent use oil diffusion pumps and ten percent use turbomolecular pumps. The quality of the end products is mainly dependent on the knowledge of the operator, and not the price of the vacuum pump. You don't become a better road user just by buying a Ferrari!

"Mercury pumps will be forbidden here soon in cases where an alternative can be used. For pumping quartz glass, a mercury diffusion pump is the most suitable because it can catch helium and hydrogen the best; others will need to convert."

BULLETIN BOARD

Tech 2000's **Tom Skarvada** called to comment on Jeremy Storm's schematic for **building an electronic choke** (NN #11). He thought the capacitor wasn't needed, and would pop unless the two transformers were very evenly balanced (upon reflection, Jeremy agrees).

Joseph Keller has a nice **glass trinket** to share: "Around the holiday season, except for a few Christmas gift signs, my business dies. To make up for it, I make icicles. Really easy, cheap and quick, they're also beautiful and make great gifts.

"Cut a 12mm or 10 mm (works better) stick into thirds; heat a 5- or 6-inch section in the middle, and when it starts to become plastic, twist and pull gently with both hands until it looks like two connected icicles. Put this aside and let it cool and do the other two sections of glass. Cut the icicles apart and fire-polish the very sharp pointed tip.

"Heat the other end to make the hook by heating, pulling the molten glass into a loop or hook shape and tipping it off in the crossfire. Let it cool and there you have it. Each icicle costs you about 7 cents and you can sell them for at least a buck each, a pretty decent markup. You might want to wear goggles; I have been hit in the face by flying glass when heating the twisted glass, which is under tremendous strain.

"Any of you HF wizards out there think of a way to inject neon in these to cause them to light on the tree with no wires?"

Daniel Dezort (Sacramento CA) writes: "Got a tip this time for those benders out there with metal manifolds. I was playing 'Beat The Leak' while trying to fill my tubes before the nasty polluted atmosphere did. Then I began heating the manifold with a small ($10-$15) **table-top space heater**. Pre-heat that puppy for 10-15 minutes before turning on the pump, which I also warm with a heating pad, and leaks are 'not.' Of course the last weld I made in the work still leaks, but the manifold doesn't."

Questions from **Tove Vils-Small** in Albany CA: "What can someone tell me about **helium-filled tubes**? I made one, looks somewhat like a cross between gold and silver. I love it, only it runs extremely hot! Are there special electrodes for helium tubes, or oversized ones? A lower filling pressure? How low? Can I mix the helium with argon?

"I also got a box of dusty electrodes; what is the best way to clean them? Water? Air pressure? Alcohol?"

Debra Lee Rose of Abaca Neon Signs in N. Miami Beach FL wrote to crow: "I am doing all the beta testing for the **Neonix** Electronic transformer – 8500/30 with manual MA adjustment. We've been working on this project for six years and now the product is on the market – it's fabulous! And it will shortly revolutionize the industry. An 8500/30 is 8x8x2 inches and will accommodate the same footage as a 15,000/30 core & coil. It has open and short circuit protection (safety device). Right now we have a 3-year warranty on them but I have some running 24 hours per day for five years, and they will probably last for ten years."

Another wild idea from **Edward DeZuzio: dartboard pattern-making** for free-form ceiling neon. "The size is about 150 square feet, with 80 feet of glass. The pattern was fun to make: paper and pencil was out, and half-inch rope and two sets of darts was in. The rope was our pencil line and the darts held the line to the ceiling, and in place of an eraser we used a ladder.

"This worked really well, as the customer could see exactly where the tubes would be and their relation to each other could be changed by simply pulling the darts and relocating the rope. (The customer was after the same shapes that accented 1950s coffee tables.).This type of "sketch" was a lot of fun. The owner and manager of the establishment both got involved; this was great for expanding our relationship.

"A design was established and measurements were taken. Once it came time to fabricate the tubes we replicated the ceiling of the installation site in the shop's driveway. We proceeded to lay out the tubes with masking tape, according to the notes we had. Once this was complete we transferred the angles to paper and used straights between them."

ADS

Neon Dynamics 3700 series power supply. All models, largest distributor, best pricing. Max Marketing-Neon.19807 Sussex Dr., S.C.S., MI 48081. Call 24 hours: (313) 773-5000; fax (313) 772-6224.

Wanted: Pumping and bombarding equipment, books and videos, (408) 297-8803.

Help! I'm looking for an old pal named **Donny Merrell**, last known to be in California. Please contact Candice Bramble King, Lijnbaansgracht 343, #4, 1017 XA, Amsterdam, Netherlands.

Experienced glassbender seeks **instruction in advanced bending techniques** in Southeastern US. Leave message at (404) 237-4550.

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